

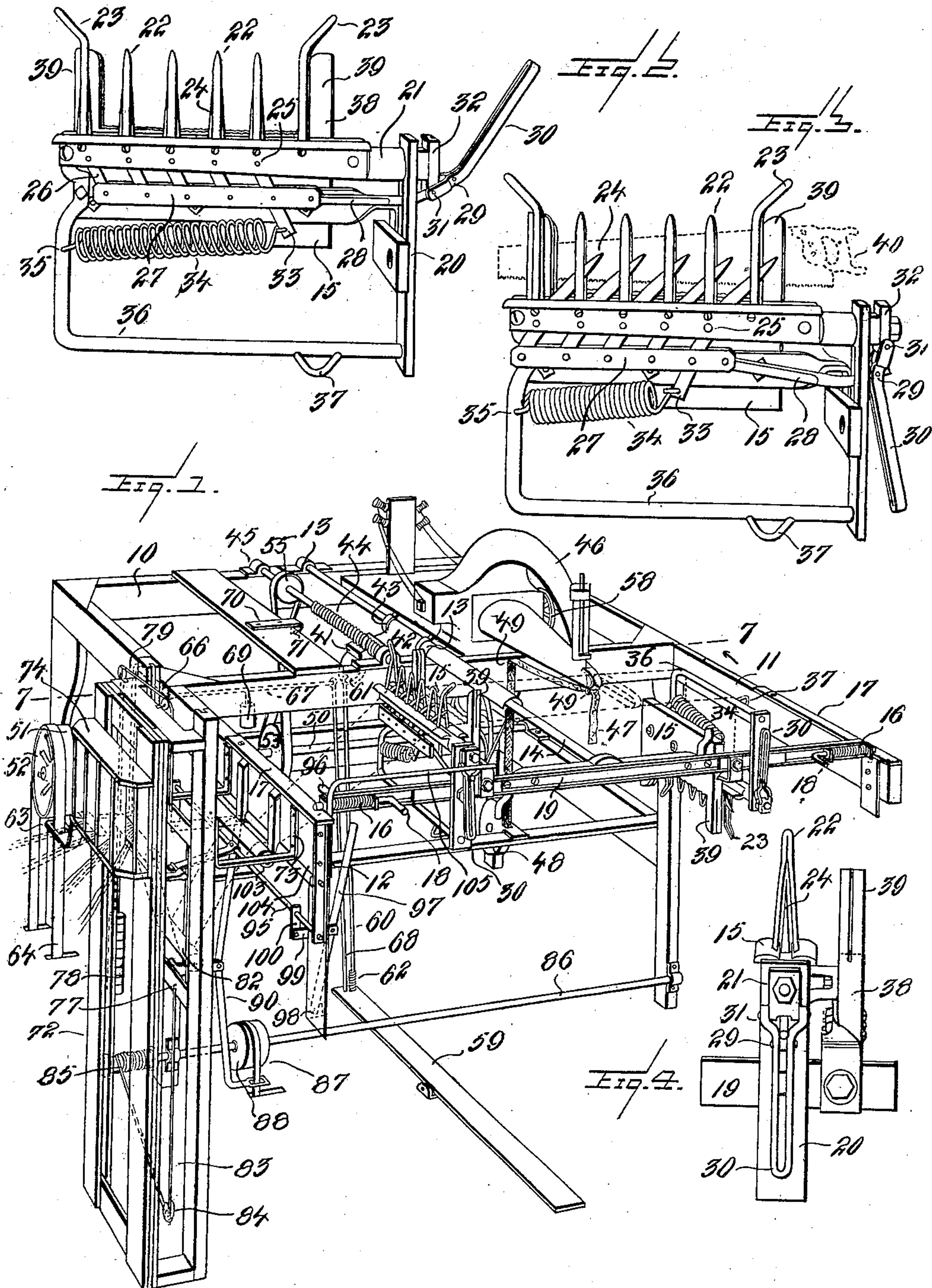
No. 891,572.

PATENTED JUNE 23, 1908.

L. STOCKER.
MACHINE FOR MAKING MOPS.

APPLICATION FILED FEB. 10, 1908.

2 SHEETS—SHEET 1.



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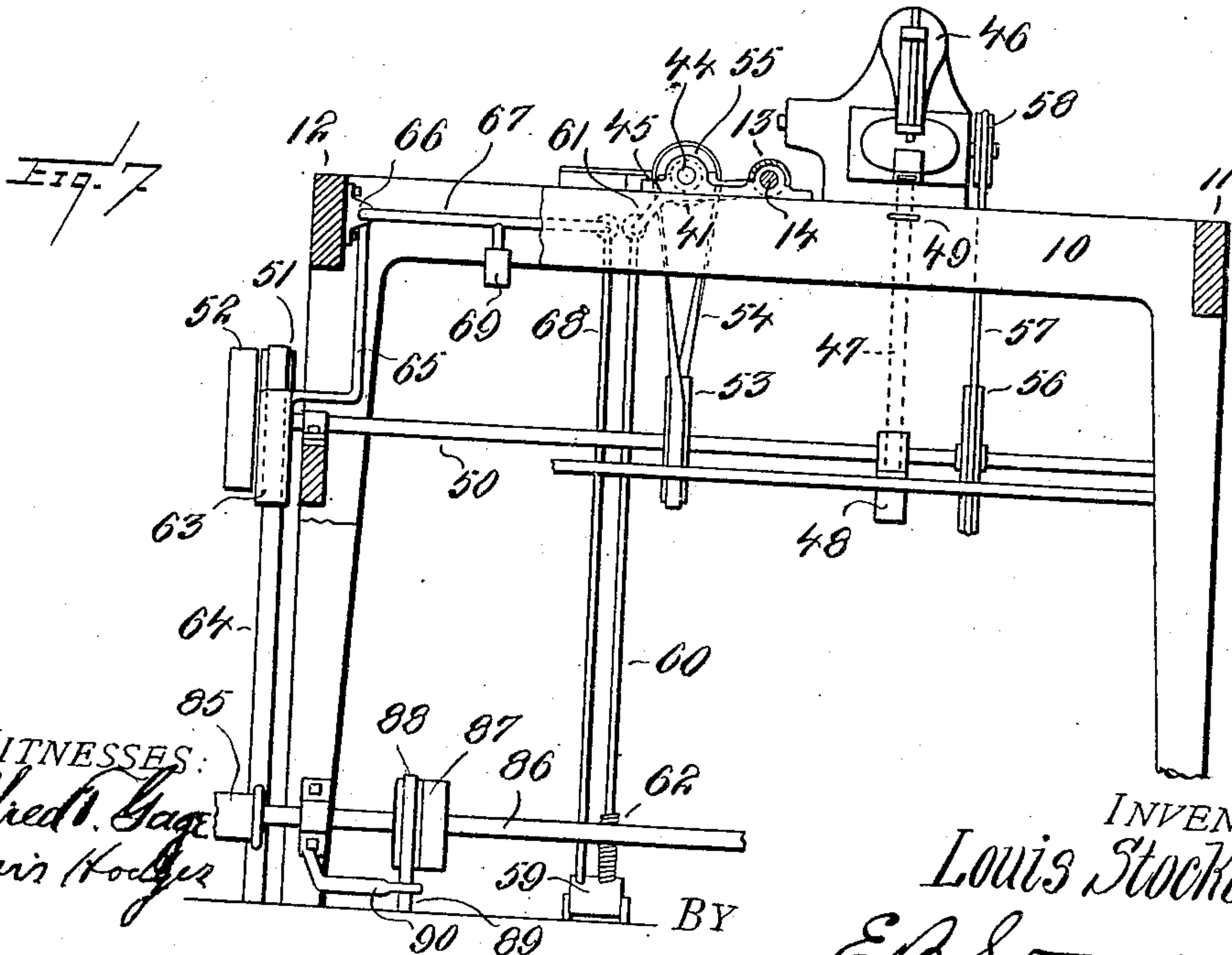
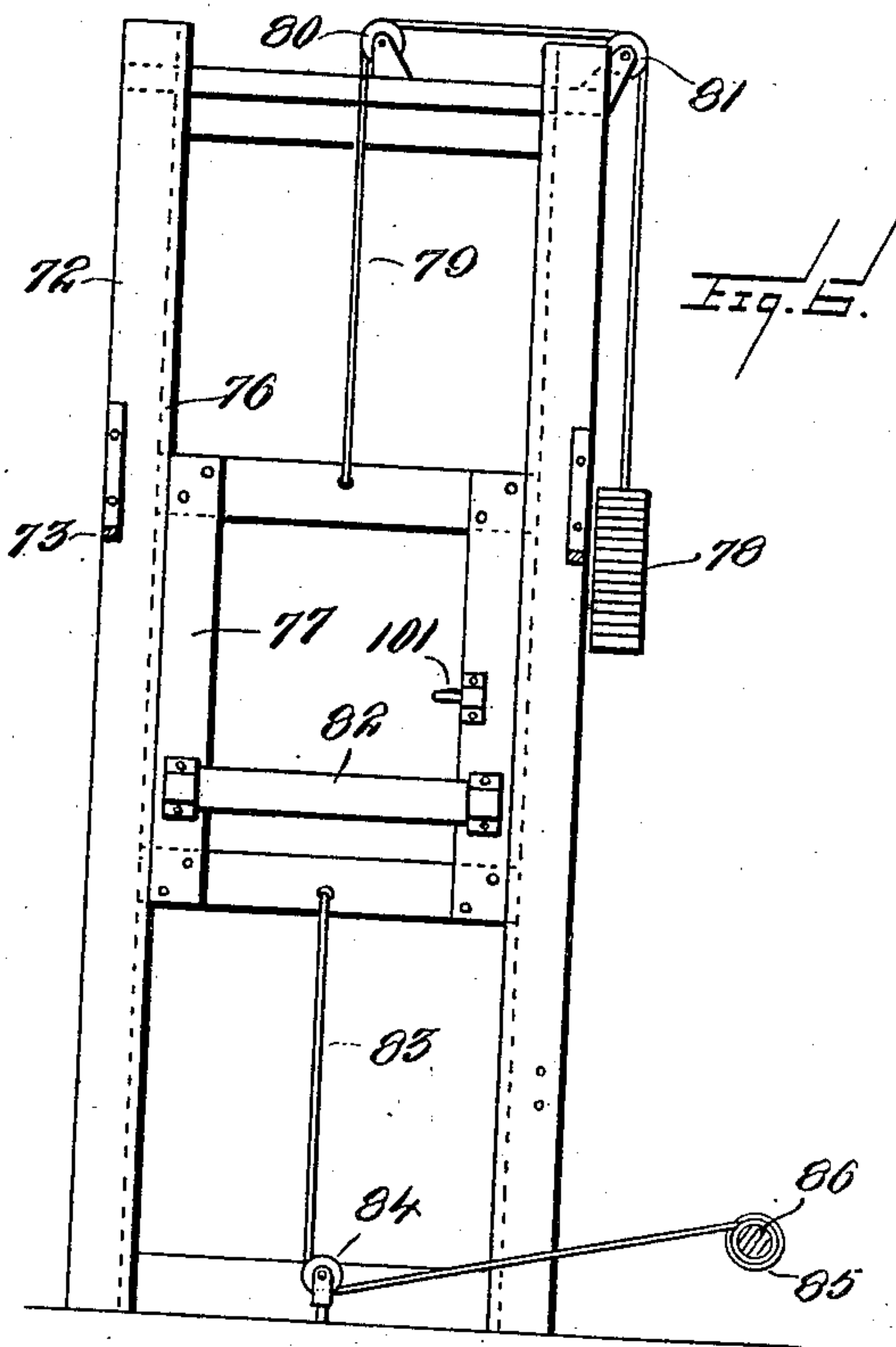
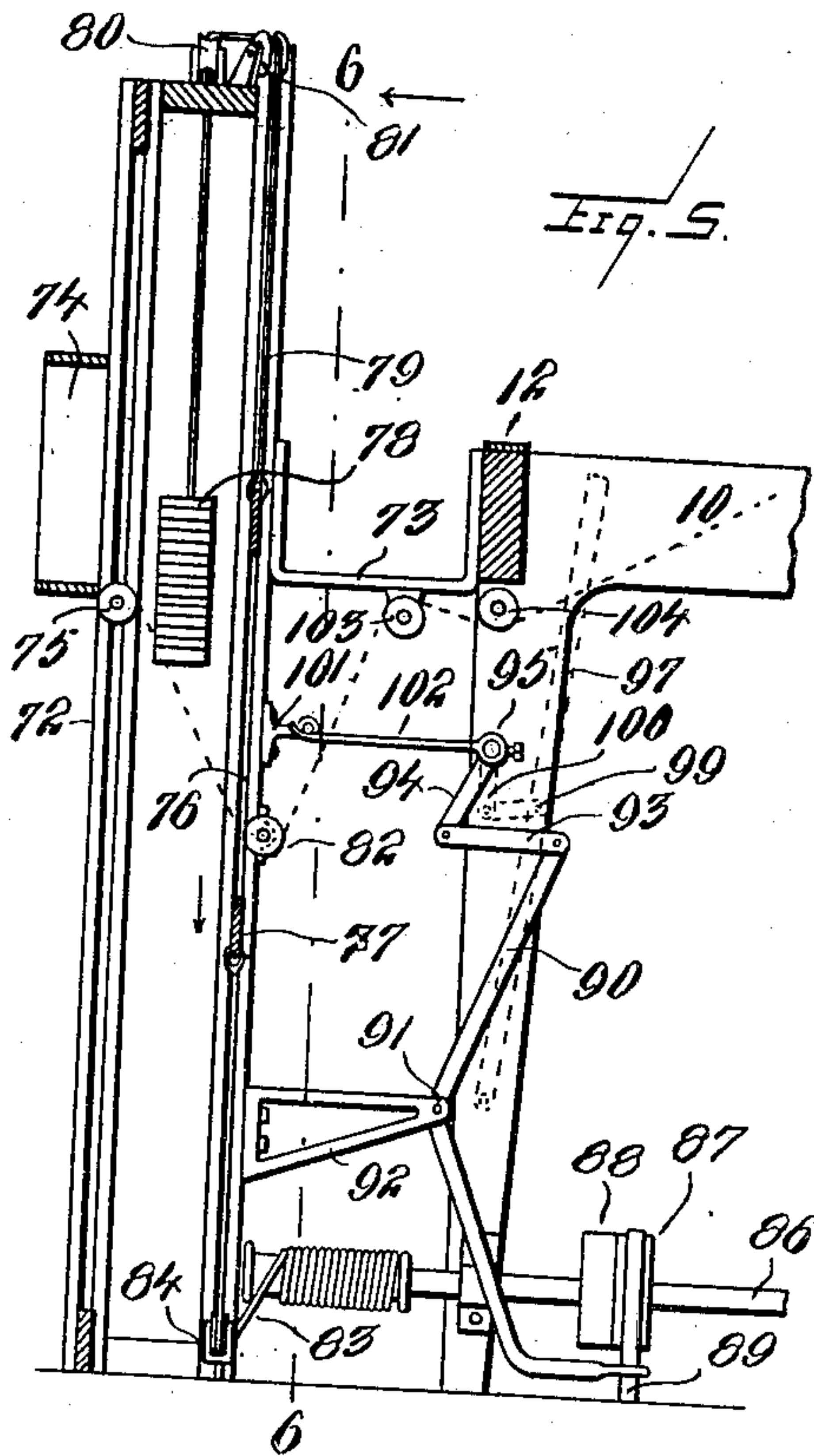
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING MOPS.

No. 891,572.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed February 10, 1908. Serial No. 415,246.

To all whom it may concern:

Be it known that I, LOUIS STOCKER, citizen of the United States, residing at Louisville, county of Jefferson, and State of Kentucky, have invented certain new and useful Improvements in Machines for Making Mops, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a mop making machine, and particularly to a structure wherein the flexible absorbent fibers are connected together by a strip sewed thereto.

The invention has for an object to provide a construction of cord or yarn supporting means by which the yarn may be held under tension and while in this condition moved relatively to a sewing mechanism for the purpose of connecting the cords by a strip sewed transversely thereon intermediate of their opposite ends.

A further object of the invention is to provide means for automatically placing the tension upon the cords while one end thereof is held by a supporting mechanism so that in the movement of this mechanism in engagement with the cords they are drawn from the supply under tension.

Another object of the invention is to provide a novel and improved construction of gripper carried by the supporting mechanism by which the cords or yarn may be held firmly under tension before and while being connected by the strip attached thereto.

35 Other and further objects and advantages of the invention will be hereinafter fully set forth and the novel features thereof defined by the appended claims.

In the drawing:—Figure 1 is a perspective view of the invention; Fig. 2 is a similar view of the gripper carried by the support; Fig. 3 is a perspective view of the gripper in closed position; Fig. 4 is an end elevation of this gripper; Fig. 5 is a central vertical section through the tension device; Fig. 6 is a section on the line 6—6, Fig. 5; Fig. 7 is a vertical section on the line 7—7, Fig. 1.

Like numerals refer to like parts in the several views of the drawings.

50 The numeral 10 designates the frame of the machine which may be of any desired construction or configuration and is provided with forwardly extending arms 11 and 12. The frame is provided with bearings 13 in

which the shaft 14 is mounted for both reciprocation and rotation, said shaft having secured to its outer end a transversely extending bar 19 disposed at substantially a right angle to the shaft and comprising carrying means for the cord or yarn grippers 15. This bar is provided at opposite ends with spring pressed bolts 16 suitably mounted to extend beyond the ends thereof and to rest in contact with the guide plates 17 on the arms 11 and 12 when the bar 19 is in horizontal position, as shown in Fig. 1. Each of these bolts is provided with an operating handle 18 by which they may be readily shifted for the purpose of rotating the bar with its gripping devices.

Any desired form of gripping device for holding the cords may be employed, but a desirable construction thereof is shown in Figs. 2, 3 and 4, and comprises the frame 20 secured to the bar 19 in any desired manner, and having a laterally extending arm 21 upon which a series of fixed open jaws 22 are secured between which the strands of cord or yarn are passed, while at the opposite ends of these jaws guide arms 23 are provided. At the base of each of the fixed jaws 22 a movable jaw 24 is mounted by means of the pivot 25 and thus adapted to swing toward the base of the gripper and toward the adjacent jaw. The lower ends 26 of the movable jaws 24 are connected by the bar 27 for simultaneous operation, and this bar is pivoted to a link 28 which at its opposite end is pivoted at 29 to the operating lever 30, the inner end 31 of this lever being pivotally mounted upon the lug 32 of the gripper frame. From the bar connecting the movable jaws an extension 33 is provided, and a tension spring 34 extends therefrom and is fixed at 35 to the guide frame 36 which is disposed at the opposite side of the gripper from the jaws and over which the yarn passes in the operation of the machine. This frame is provided with a stop or lug 37 to limit the lateral movement of the yarn thereon when the gripper is moved toward the sewing mechanism. This spring normally retains the jaws in gripping position, as shown in Fig. 3 with the operating lever lowered. When it is desired to open the jaws and to release the yarn, this lever is raised into the position shown in Fig. 2 and the spring placed under tension. For the purpose of separating a completed mop

fabric from the remainder of the strands from which it is made a cutter guide 38 is mounted at the side of the gripper next the rotatable shaft by which it is carried. This frame
5 comprises bifurcated members 39 at its opposite ends between which a saw 40 or other cutting device may be inserted, as indicated by dotted lines in Fig. 3.

For the purpose of connecting the strands
10 forming the mop fabric a strip is extended transversely of the length thereof and sewed thereon. This sewing may be effected by the relative movement of the sewing mechanism and the supporting mechanism so that one
15 thereof is brought into the field of action of the other. In the present instance the supporting mechanism is provided with means for imparting thereto a movement laterally of the strands carried thereby and this may
20 be effected by any desired means, for instance, a feed nut 41 carried by a sleeve 42 which is loosely mounted upon the shaft 14 and held against lateral displacement by means of set collars 43 at its opposite ends.
25 This nut engages a screw or worm shaft 44 mounted in bearings 45 upon the frame 10. Upon this frame a sewing mechanism 46 of any desired character may be rigidly secured in a position substantially midway between
30 the opposite gripping devices upon the rotatable bar 19. The tape or strip 47 to be applied to the cords may be carried by a spool 48 mounted upon the frame and suitable guides 49 carried to the point of application
35 where it is passed by hand entirely around the cords before the stitching action. For the purpose of driving these several parts a main driving shaft 50 is mounted upon the frame and provided with a fast pulley 51 and
40 a loose pulley 52 at one end of the frame. This shaft is also provided with a driving pulley 53 from which belt 54 extends to the pulley 55 upon the shaft of the screw 44.

For the purpose of driving the sewing
45 mechanism simultaneously with the feeding action a pulley 56 is provided on the shaft 50 and the belt 57 extends therefrom to the driving wheel 58 upon the sewing mechanism. The feed nut 41 is raised into operative en-
50 gagement with the screw 44 by means of the treadle 59 and a rod 60 extending therefrom to a depending lug 61 from the nut. This rod may be provided with a spring connection 62 by which a yielding contact between the nut
55 and screw is secured. The treadle 59 is also connected with the belt shifter 63 through which the driving belt 64 for the pulleys 51 and 52 passes. This shifter is carried by the depending arm 65 extending downward from
60 the pivotal bearing 66 upon the frame and connected to the lever 67 which lever at its opposite end is connected with the rod 68 extending to the inner end of the treadle 59. This rod is provided with a suitable weight
65 69 for restoring the belt to the loose pulley

and the treadle to its initial position. By this treadle connection the driving shaft is started to drive the sewing mechanism and feed screw, while the nut is simultaneously brought into engagement with said screw. 70
In order to positively determine the travel of this nut upon the screw a stop 70 is mounted upon the frame and provided with a curved face 71 adapted to engage the downwardly curved face of the lug 61 from the traveling 75 nut thus throwing the same out of engagement with the screw which is permitted by the spring connection 62 with the treadle.

A preferred form of the automatically operated tension mechanism is illustrated in 80 detail in Figs. 5 and 6 and comprises a frame 72 supported at one end of the machine in alinement with the grippers. This tension device may be mounted upon the end bar 12 by means of the bracket 73 and is provided 85 with a guide 74 through which the strands of cord or yarn pass on their way to the grippers. At the base of this guide a roller 75 is provided over which these strands pass. The guide is also formed with a vertically 90 disposed track or way 76 in which a tension carriage 77 is slidingly mounted, the weight thereof being counterbalanced to any desired extent by means of the weights 78 connected to the carriage by a cord or cable 79 95 which passes over suitable pulleys 80 and 81 mounted upon the frame. The carriage is provided with a roller 82 under which the cord passes, and the carriage is adapted to be moved downwardly to draw a supply of cord 100 by the cable connection 83 passing over the guide pulley 84 and wound upon a drum 85 on the shaft 86 mounted at the base of the machine. This shaft is provided with a fast pulley 87 and a loose pulley 88 suitably 105 mounted thereon and driven from the belt connection 89 which is independent of the driving mechanism for the feed and sewing parts. The belt 89 is adapted to be shifted by an angle lever 90 pivotally mounted at 91 110 in the bracket 92 and connected by the link 93 with the crank arm 94 from the rock shaft 95 mounted upon the machine frame, as shown in Fig. 1. This shifting lever is automatically moved to place the belt in driving 115 position, as shown in Fig. 5, in the swinging or rotary movement of the grippers, as the bar 19 thereof is provided with inwardly projecting pins 96 at opposite ends which in their travel contact with the pivoted lever 97 120 and shift the rock shaft 95. This lever is pivotally mounted upon a fixed part at its lower end 98 and connected by the link 99 with the crank arm 100 carried by the shaft 95. When the parts are in the position 125 shown in Fig. 5, the cable 83 is wound upon the drum on the shaft 86 until the carriage reaches the lower part of the tension frame when the belt is shifted to the loose pulley by means of the stop 101 mounted upon this 130

carriage and adapted to engage the trip arm 102 secured to the rock shaft 95, as clearly shown in Fig. 5. The cord strands pass under the roller 82 of the carriage and thence
 5 over the roller 103 carried by the bracket 73 and under the roller 104 mounted upon the frame from whence they pass to the gripping devices before described.

From the foregoing description the operation of the machine will be apparent, and with the parts in the position shown in Fig. 1 with the cord strands held under tension by the grippers the tape is carried around these strands by hand and the treadle then depressed to apply power to the main driving shaft which actuates the sewing mechanism and simultaneously the feed of the grippers carrying the cords to the sewing mechanism. This feed continues until automatically released by the striker removing the traveling nut from its screw when pressure upon the treadle is released stopping the sewing and feed mechanisms and permitting the bar carrying the grippers to be drawn in sliding contact outward to the front of the machine by hand where the cords at the underside of the uppermost gripper are cut or severed by any suitable tool. The opposite end of the completed mop is removed from the under gripper by opening the same, while the ends of the strands are retained by the upper gripper, and the bar carrying these grippers reversed in position by withdrawing the slide bolt at the right and carrying the bar for a half revolution and reversing the position of the grippers, and during this movement the actuating lever of the grippers engages the bar 105 at the front of the machine and is thrown downward into locked position, while the bolt rests upon the guide plate at the left end of the machine. During this travel the actuating lever of the tension mechanism has been shifted and the carriage thereof drawn downward placing the strands in the grippers under tension and also drawing a fresh length from the supply so that in the subsequent rotation of the grippers the carriage is raised by the draft upon the strands and a proper tension maintained thereon at all times. The downward movement of the tension carriage shifts the driving belt for the shaft thereof to the loose pulley thus stopping the travel of the carriage.

It will be seen that the invention presents a machine adapted for the manufacture of mops, brushes and similar articles in which a series of flexible absorbent strands are connected together by an encircling band which is sewed thereto. Such mops are used in connection with handles or clamping devices to which they may be attached.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is:—

65 1. In a machine of the class described, a

frame, a movable cord support mounted thereon and provided with a cord gripping device for retaining a plurality of parallel cord strands under tension upon said support.

2. In a machine of the class described, a frame, a movable cord support mounted thereon and provided with a cord gripping device for retaining the cord under tension upon said support, a sewing mechanism, and means for moving said support and mechanism relative to each other.

3. In a machine of the class described, a frame, a movable cord support mounted thereon and provided with a cord gripping device for retaining a plurality of parallel cord strands under tension upon said support, and a movable tension device disposed at the feeding side of said support.

4. In a machine of the class described, a frame, a movable cord support mounted thereon and provided with a cord gripping device for retaining the cord under tension upon said support, a movable tension device disposed at the feeding side of said support, and means carried by said support for automatically controlling one movement of the tension device.

5. In a machine of the class described, a frame, a movable cord support mounted thereon and provided with a cord gripping device for retaining the cord under tension upon said support, a tension device disposed at the feeding side of said support, means carried by said support for automatically controlling one movement of the tension device, and means carried by said tension device for automatically shifting the tension controlling means.

6. In a machine of the class described, a rotatably mounted cord holder provided at opposite ends with gripping devices adapted to hold a plurality of cord strands.

7. In a machine of the class described, a rotatably mounted cord holder provided at opposite ends with gripping devices adapted to hold a plurality of cord strands, one of said gripping devices being disposed in an opposite direction to the other.

8. In a machine of the class described, a rotatably mounted cord holder provided at opposite ends with gripping devices, an operating handle extending from one end of said gripping devices, and means carried by a fixed part for actuating said handle in the movement of the cord holder.

9. In a machine of the class described, a pivotally mounted cord holder provided at opposite ends with gripping devices, an operating handle extending from one end of said gripping devices, a sewing mechanism, and means for moving said sewing mechanism and holder relative to each other.

10. In a machine of the class described, a frame, a shaft mounted thereon, a rotatable

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bar disposed at one end of said shaft, and gripping devices carried by said bar and at opposite sides of its axis.

11. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, and projecting devices from the ends of said bar to rest upon the upper faces of said arms.

12. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, and spring pressed bolts carried by the free ends of said bar to engage said arms.

13. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, spring pressed bolts carried by the free ends of said bar to engage said arms, a sewing mechanism, and means for moving said bar and shaft parallel to the axis thereof.

14. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, spring pressed bolts carried by the free ends of said bar to engage said arms, a sewing mechanism, a traveling nut mounted upon said shaft, a feed screw and means for rotating the same and means for moving said nut toward and from said screw.

15. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, spring pressed bolts carried by the free ends of said bar to engage said arms, a sewing mechanism, a traveling nut mounted upon said shaft, a feed screw and means for rotating the same, means for moving said nut toward and from said screw, and a stop member adapted to engage and shift said nut in its travel upon said screw.

16. In a machine of the class described, a frame, a shaft rotatably mounted thereon, a bar disposed at one end of said shaft, gripping devices carried by said bar and at opposite sides of said shaft, arms extended from said frame parallel to said shaft, spring pressed bolts carried by the free ends of said bar to engage said arms, a sewing mechanism, a traveling nut mounted upon said shaft, a feed screw and means for rotating the same,

means for moving said nut toward and from said screw, operating levers extended from one end of said grippers, and a fixed arm adapted to engage and shift said gripper levers.

17. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper supported upon said holder and comprising a series of fixed and movable members, and an operating lever upon the end of said gripper for actuating all the movable members.

18. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper supported upon said holder and comprising fixed and movable members, an operating lever upon the end of said gripper for actuating the movable members, and a cord supporting frame at the opposite side of the gripper from said members.

19. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper supported upon said holder and comprising fixed and movable members, an operating lever upon the end of said gripper for actuating the movable members, a cord supporting frame at the opposite side of the gripper from said members, and a projection upon said cord frame to prevent lateral movement of the cords resting thereon.

20. In a machine of the class described, a frame a cord holder rotatably mounted thereon, a gripper supported upon said holder and comprising fixed and movable members, an operating lever upon the end of said gripper for actuating the movable members, a cord supporting frame at the opposite side of the gripper from said members, and a tension spring connecting the movable members with said cord supporting frame.

21. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper upon said holder comprising movable and fixed jaws arranged to hold a plurality of parallel cord strands, and a cutter guide disposed upon the holder at the inner side of said gripper.

22. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper upon said holder comprising movable and fixed jaws arranged to hold a plurality of parallel cord strands, and a cutter guide disposed upon the holder at the inner side of said gripper and comprising bifurcated members extended therefrom.

23. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper upon said holder provided with open fixed jaws, movable jaws pivotally mounted to pass through said fixed jaws, a bar connecting the extending ends of the movable jaws, a tension spring extended from said bar to a fixed point, and an operating lever connected to said bar.

24. In a machine of the class described, a

frame, a cord holder mounted thereon, a gripper upon said holder provided with open fixed jaws, movable jaws pivotally mounted to pass through said fixed jaws, a bar connecting the extending ends of the movable jaws, a tension spring extended from said bar to a fixed point, an operating lever connected to said bar, and arms disposed at the opposite ends of the gripper to guide the cords toward said jaws.

25. In a machine of the class described, a frame, a cord holder mounted thereon, a gripper upon said holder provided with open fixed jaws, movable jaws pivotally mounted to pass through said fixed jaws, a bar connecting the extending ends of the movable jaws, a tension spring extended from said bar to a fixed point, an operating lever connected to said bar, a plate carried by one end of said gripper for attachment to said holder, and means for mounting said operating lever adjacent said plate to contact therewith.

26. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, and a treadle connection for holding said nut in engagement with said screw shaft.

27. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, a depending lug from said nut, and a stop member having an inclined face to engage said lug.

28. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle and connecting rod for holding said nut in engagement with said screw shaft, and a yielding connection between said treadle and connecting rod for said nut.

29. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, fast and loose pulleys upon said driving shaft, and a belt shifting connection actuated from said treadle.

30. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mount-

ed to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, fast and loose pulleys upon said driving shaft, a rock shaft pivotally mounted upon said frame and provided at one end with a belt shipper, a lever extended from the opposite end of said rock shaft, restoring means carried by said lever, and a rod connection from said lever to said treadle.

31. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, a sewing mechanism supported upon said frame, and a connection from said driving shaft to said sewing mechanism.

32. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, a sewing mechanism supported upon said frame, a connection from said driving shaft to said sewing mechanism, and a power controlling connection extended from said treadle for simultaneous movement with the shifting of the feed nut.

33. In a machine of the class described, a frame, a driving shaft mounted thereon, a feed screw mounted upon said frame and driven from said shaft, a cord holder mounted to reciprocate relative to said frame, a traveling nut carried by said holder, a treadle connection for holding said nut in engagement with said screw shaft, a sewing mechanism supported upon said frame, a connection from said driving shaft to said sewing mechanism, a power controlling connection extended from said treadle for simultaneous movement with the shifting of the feed nut, a tape spool mounted upon said frame, and guides extending from said spool to the normal position of the cord holder.

34. In a machine of the class described, a frame, a sewing mechanism thereon, a driving shaft for said mechanism, a treadle connection for controlling the power to said shaft, and a cord holder movable relative to the sewing mechanism and provided with gripping devices.

35. In a machine of the class described, a frame, a sewing mechanism thereon, a main driving shaft for said mechanism, a treadle connection for controlling the power to said driving shaft, a rotatable cord holder provided with gripping devices, a tension mech-

anism disposed at the feed end of said cord holder, a driving shaft for operating said mechanism to place material under tension, and means carried by said holder for automatically actuating said tension driving shaft in the movement of the holder.

36. In a machine of the class described, a frame, a sewing mechanism thereon, a main driving shaft for said mechanism, a treadle connection for controlling the power to said driving shaft, a rotatable cord holder provided with gripping devices and a feed shaft, a tension mechanism disposed at the feed end of said cord holder, a driving shaft for operating said mechanism to place material under tension, means carried by said holder for automatically actuating said tension driving shaft in the movement of the holder, a connection from the main driving shaft to the feed shaft, and means carried by the shaft of the cord holder for moving it parallel with its axis.

37. In a machine of the class described, a frame, a sewing mechanism thereon, a main driving shaft for said mechanism, a treadle connection for controlling the power to said driving shaft, a rotatable cord holder provided with gripping devices and a feed shaft, a tension mechanism disposed at the feed end of said cord holder, a driving shaft for operating said mechanism to place material under tension, means carried by said holder for automatically actuating said tension driving shaft in the movement of the holder, a connection from the main driving shaft to the feed shaft, means carried by the shaft of the cord holder for moving it parallel with its axis, and means for automatically disengaging the connection of the holder shaft with the feed shaft.

38. In a machine of the class described, a frame, a sewing mechanism thereon, a main driving shaft for said mechanism, a treadle connection for controlling the power to said driving shaft, a rotatable cord holder provided with gripping devices and a feed shaft, a tension mechanism disposed at the feed end of said cord holder, a driving shaft for operating said mechanism to place material under tension, means carried by said cord holder for automatically actuating said tension driving shaft in the movement of the holder, a connection from the main driving shaft to the feed shaft, means carried by the shaft of the cord holder for moving it parallel with its axis, means for automatically disengaging the connection of the holder shaft with the feed shaft, and a yielding connection from said treadle to the connection with said feed shaft.

39. In a machine of the class described, a frame, a shaft mounted thereon and carrying at one end a rotatable cord holder, gripping devices supported by said holder at opposite sides of said shaft and disposed in reverse di-

rections to each other, an actuating lever carried by one end of said grippers, and fixed means for automatically shifting the lever into locking position as one of the grippers reaches the feed end of the machine.

40. In a machine of the class described, a frame, a shaft rotatably mounted thereon and carrying at one end a cord holder, gripping devices supported by said holder at opposite sides of said shaft and disposed in reverse directions to each other, an actuating lever carried by one end of said grippers, and a cord supporting frame carried by said grippers at one side thereof and in alinement with the gripper at the opposite end of the holder.

41. In a machine of the class described, a frame, a shaft rotatably mounted thereon and carrying at one end a cord holder, gripping devices supported by said holder at opposite sides of said shaft and disposed in reverse directions to each other, an actuating lever carried by one end of said grippers, a cord supporting frame carried by said grippers at one side thereof and in alinement with the gripper at the opposite end of the holder, a cord engaging projection disposed upon said supporting frame, a sewing mechanism, and means for moving said sewing mechanism and cord holder toward and from each other.

42. In a machine of the class described, a frame, a movable cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder and means for controlling a movement of said carriage in the movement of said holder.

43. In a machine of the class described, a frame, a movable cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, and means operably controlled by said holder for moving said carriage downward to draw a supply of cord thereto.

44. In a machine of the class described, a frame, a movable cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft operably controlled by said holder, and a connecting cable extending from said carriage and adapted to be wound upon said shaft.

45. In a machine of the class described, a frame, a movable cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft operably con-

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trolled by said holder, a connecting cable extending from said carriage and adapted to be wound upon said shaft, and a cable and counterbalancing weight connected to the upper portion of said carriage.

46. In a machine of the class described, a frame, a cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft, a connecting cable extending from said carriage and adapted to be wound upon said shaft, and means for actuating said driving shaft adapted to be automatically operated in the movement of the cord holder.

47. In a machine of the class described, a frame, a cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft, a connecting cable extending from said carriage and adapted to be wound upon said shaft, fast and loose pulleys upon said driving shaft, a belt upon said pulleys, a belt shipper, and a lever operatively connected to said shipper and disposed in the path of a projection from said cord holder.

48. In a machine of the class described, a frame, a cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft, a connecting cable extending from said carriage and adapted to be wound upon said shaft, fast and loose pulleys upon said driving shaft, a belt upon said pulleys, a belt shipper, a lever operatively connected to said shipper and disposed in the path of a projection from said cord holder, and means carried by the tension carriage for moving said belt shipper into inoperative position.

49. In a machine of the class described, a frame, a cord holder mounted thereon, a tension device at the feeding end of said holder comprising a carriage having a bearing in contact with the cord leading to said holder, means for gripping the cord upon said holder, a driving shaft, a connecting cable extending from said carriage and adapted to be wound upon said shaft, fast and loose pulleys upon said driving shaft, a belt upon said pulleys, a belt shipper, a lever operatively connected to said shipper and disposed in the path of a projection from said cord holder, a rock shaft connected to the belt shipper, an arm carried by said rock shaft, and a projection disposed upon the carriage in the path of said arm.

50. In a machine of the class described, a frame, a movable cord holder mounted thereon, a tension frame supported at the feeding end of the cord holder, a carriage mounted in

said frame and provided with a friction roller, means to control one movement of said carriage in the travel of said holder and a guide frame at one side of the tension frame provided with a friction roller.

51. In a machine of the class described, a frame, a rotatable cord holder thereon provided with a gripping device, a tension frame mounted at the feed end of the cord holder, a carriage mounted for vertical movement in said frame and having a bearing to rest upon a cord, a driving shaft connected to said carriage for drawing the same downward, a rock shaft, fast and loose pulleys upon said driving shaft, a belt shipper connected with the belt for said pulleys and with said rock shaft, a lever connected with a crank arm from said rock shaft, and a projection from the cord holder adapted to engage said lever in its upward travel.

52. In a machine of the class described, a frame, a rotatable cord holder thereon provided with a gripping device, a tension frame mounted at the feed end of the cord holder, a carriage mounted for vertical movement in said frame and having a bearing to rest upon a cord, a driving shaft connected to said carriage for drawing the same downward, a rock shaft, fast and loose pulleys upon said driving shaft, a belt shipper connected with the belt for said pulleys and with said rock shaft, a lever connected with a crank arm from said rock shaft, a projection from the cord holder adapted to engage said lever in its upward travel, an arm from said rock shaft, and a projection from the tension carriage adapted to engage said arm in its downward travel.

53. In a machine of the class described, a frame, a sewing mechanism mounted thereon, a rotatable cord holder having gripping devices, means for moving said sewing mechanism and cord holder relative to each other, a tension device at the feed end of the cord holder and comprising a movable carriage, and means for automatically moving said carriage to draw a supply of cord in the upward travel of one of the gripping devices.

54. In a machine of the class described, a frame, a rotatable cord holder provided at opposite ends with gripping devices, a sewing mechanism disposed transversely of the cord lengths upon said holder, and means for relatively moving the sewing mechanism and cord holder for sewing intermediate of the gripping devices.

55. In a machine of the class described, a frame, a rotatable cord holder provided at opposite ends with gripping devices, a sewing mechanism disposed transversely of the cord lengths upon said holder, means for relatively moving the sewing mechanism and cord holder for sewing intermediate of the gripping devices, and means for receiving a device for cutting the cords at the inner side of the gripper next the supply.

56. In a machine of the class described, a frame, a rotatable cord holder provided at opposite ends with gripping devices, a sewing mechanism disposed transversely of the cord lengths upon said holder, means for relatively moving the sewing mechanism and cord holder for sewing intermediate of the gripping devices, and means for applying a tension to said cords intermediate of the gripper next the supply and the source of supply.

57. In a machine of the class described, a frame, a rotatable cord holder provided at opposite ends with gripping devices, a sewing mechanism disposed transversely of the cord lengths upon said holder, means for relatively moving the sewing mechanism and cord holder for sewing intermediate of the gripping devices, means for applying a tension to said cords intermediate of the gripper next the supply and the source of supply, and means for closing one of said gripping devices in its upward travel into engagement with the cords.

58. In a machine of the class described, a frame, a relatively fixed sewing mechanism mounted thereon, a feed shaft mounted in said frame, a cord holder having a shaft mounted for rotary and reciprocatory movement upon said frame, and means for connecting said holder shaft with the feed shaft whereby the cords carried by the holder traverse the sewing mechanism.

59. In a machine of the class described, a frame, a relatively fixed sewing mechanism mounted thereon, a feed shaft mounted in said frame, a cord holder having a shaft mounted for rotary and reciprocatory movement upon said frame, means for connecting said holder shaft with the feed shaft whereby the cords carried by the holder traverse the sewing mechanism, and means for automatically releasing the holder shaft from the feed shaft.

60. In a machine of the class described, a frame, a relatively fixed sewing mechanism mounted thereon, a feed shaft mounted in said frame, a cord holder having a shaft

mounted for rotary and reciprocatory movement upon said frame, means for connecting said holder shaft with the feed shaft whereby the cord carried by the holder traverses the sewing mechanism, and means carried by the holder for maintaining the same in the plane of the sewing mechanism.

61. In a machine of the class described, a frame, a swinging cord holder mounted thereon, and means for retaining a plurality of parallel cord strands under tension upon said holder.

62. In a machine of the class described, a frame, a swinging cord holder mounted thereon, a sewing mechanism, and means for moving said holder and mechanism relative to each other during the sewing operation.

63. In a machine of the class described, a frame, a swinging cord holder mounted therein, a sewing mechanism, and means for shifting said holder longitudinally of its axis and relative to said mechanism.

64. In a machine of the class described, a frame, a rotatable cord holder mounted therein, a sewing mechanism, and means for moving said holder and mechanism relative to each other during the sewing operation.

65. In a machine of the class described, a frame, a rotatable cord holder mounted therein, a sewing mechanism, means for moving said holder and mechanism relative to each other during the sewing operation, a driving shaft for said mechanism and moving means provided with fast and loose pulleys thereon, a belt shipper for said pulleys, a rock shaft having an arm connected with said shipper, a lever extended from said rock shaft, restoring means carried by said lever, and a treadle operatively connected to said lever.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS STOCKER.

Witnesses:

E. R. RUPPERT,
G. J. WEBER.